OPPORTUNISTIC INSECT SAMPLE COLLECTION RATIONALE AND METHODS
Olin McIntosh OU-2
July 2, 2010

Olin MACTEC plan to collect insect samples concurrently with floodplain soil and vegetation sampling activities. Insect samples will be collected opportunistically from representative floodplain areas surrounding the Olin Basin and Round Pond.

Sampling Rationale

Historical insect data were collected prior to remediation activities at Ciba, located to the north of McIntosh Operable Unit 2 (OU-2). This opportunistic sample collection should be representative of current site insect concentrations. Six sampling locations have been chosen to represent the distribution of mercury, hexachlorobenzene (HCB), and the 2,4'- and 4,4'-congeners of DDT, DDE, and DDE (collectively, DDTR) in insects (Figure 1). These locations are co-located with floodplain soil sample locations. Two sample collection methods will be used to collect insects: lighted sheets and canvas tarps. The goal will be to collect and analyze one sample from the lighted sheet collection method, one sample from the canvas tarp collection method and a third sample for arachnids at each location, depending upon sample mass. The final number of samples submitted to the analytical laboratory will be determined by the types and mass of insects collected. Arachnids will be segregated for individual analysis, if possible. Time is limited for opportunistic sampling and should sample mass not be achieved within a reasonable timeframe then different nearby sample locations of the same sample type may be composited to achieve minimum mass requirements for chemical analysis (1 gram [g] for mercury and 30 g for HCB DDTR). A sample summary is included in Table 1. Sampling and analysis will be performed in accordance with the EPA approved Quality Assurance Project Plan (QAPP) dated October 9, 2008.

Sampling Methods

Lighted Sheets

Lighted sheet sampling will be conducted at dusk and night. Two white sheets will be suspended in the trees using rope at the selected sampling locations. A white light will be placed to illuminate one of the sheets, and a UV light will be placed to illuminate the other sheet (different types of light attract different types of insects). After a minimum of 30 minutes of undisturbed lighting time, samplers will return to the area and collect the insects that have been attracted to the sheets using decontaminated tweezers or similar sampling devices. Sample weight will be measured using a digital scale with 0.1 gram accuracy. Samples will be analyzed for mercury (Method E245.6) and HCB DDTR (Method 8081A). Samples will be shipped via chain-of-custody procedures on wet ice to Pace Analytical Laboratories in Green Bay, Wisconsin (Pace Green Bay). One lighted sheet sample will be targeted per sampling location.

Canvas Tarps

Canvas tarp sampling will occur during daylight hours. A 28-inch by 28-inch canvas tarp supported by a frame will be held under shrubs, trees, and other appropriate vegetation in the sampling area. The vegetation will be shaken or hit with a stick to dislodge insects from the vegetation which will freefall onto the canvas. Insects will be collected from the canvas surface. Sample weight will be measured using a digital scale with 0.1 gram accuracy. Samples will be analyzed for mercury (Method E245.6) and HCB DDTR (Method

8081A). Samples will be shipped via chain-of-custody procedures on wet ice to Pace Green Bay. One canvas tarp sample will be targeted per sampling location.

Spider Samples

Spider samples will be collected using nets, or long handled sampling devices used for web removal, and or canvas tarps. Spider samples will be analyzed for mercury (Method E245.6) and HCB DDTR (Method 8081A). Samples will be shipped via chain-of-custody procedures on wet ice to Pace Green Bay. One spider sample will be targeted per sampling location.

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